



Headquarters, US Marine Corps



Aviation C2 2008 Vision

APC
August 2003

Marine Aviation Command and
Control
ready to provide C2 at a moments
notice
in any dark corner of the world ...



Aviation C2 Vision

- ♦ **Marine Air Command and Control Systems will provide an expeditionary C2, sensor and weapons capability that will enable timely decision making, weapons employment and C2 execution in a networked environment**
 - Modular, scalable and mobile warfighting capabilities within a family of systems
 - Flexible and sustainable to support the warfighter in a dynamic battlespace
 - Scaleable SIAP/COP (pull information required)



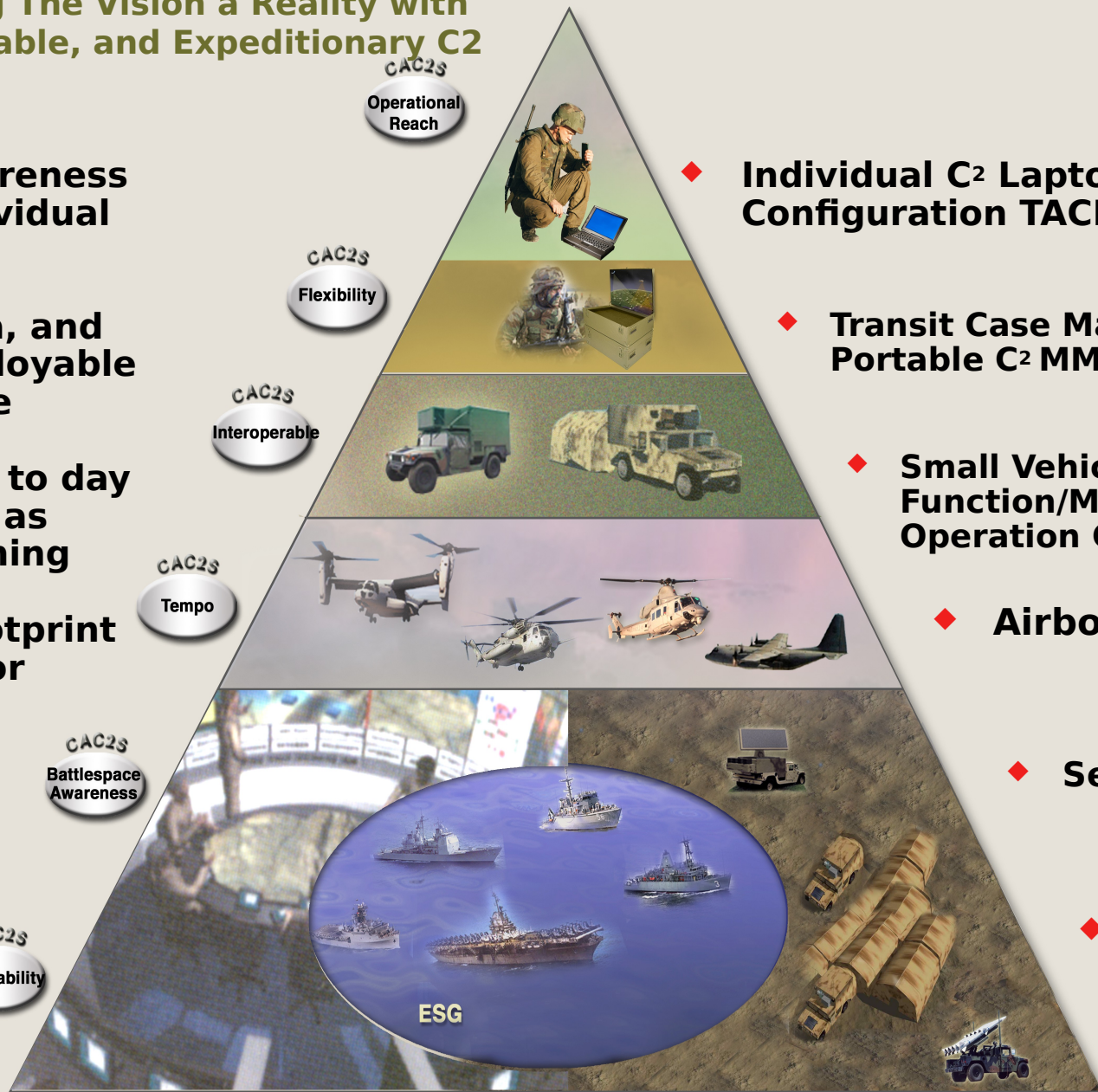
Joint Battlespace awareness at all levels and from any location



Marines

CAC2S Making The Vision a Reality with Robust, Scalable, and Expeditionary C2

- ◆ Shared awareness to individual Marine
- ◆ Ground, sea, and air C². Employable on the move
- ◆ Used in day to day operations, as well as training
- ◆ Physical footprint tailorable for specific OC

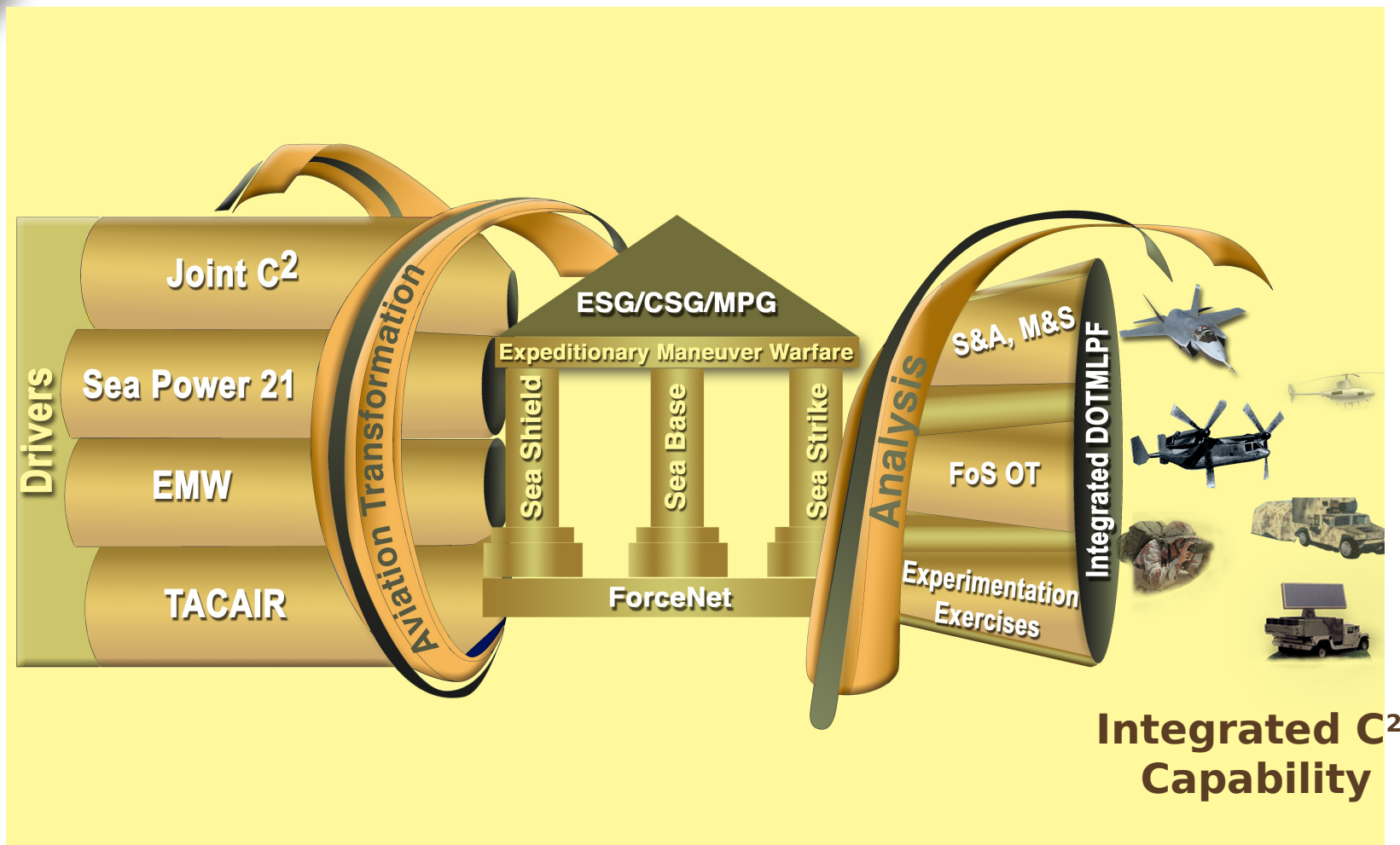


- ◆ Individual C² Laptop Configuration TACP
- ◆ Transit Case Man Portable C² MMT/Sensor
- ◆ Small Vehicle C² Single-Function/Multi-Function Operation Center
- ◆ Airborne C²
- ◆ Seabased C²
- ◆ Reachback to CONUS

Command Center Seabased Extension of ESG/CSG



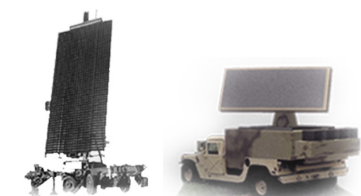
Drivers for Change



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Joint Capability Integration



AN/TPS-59 MRRS



CLAWS



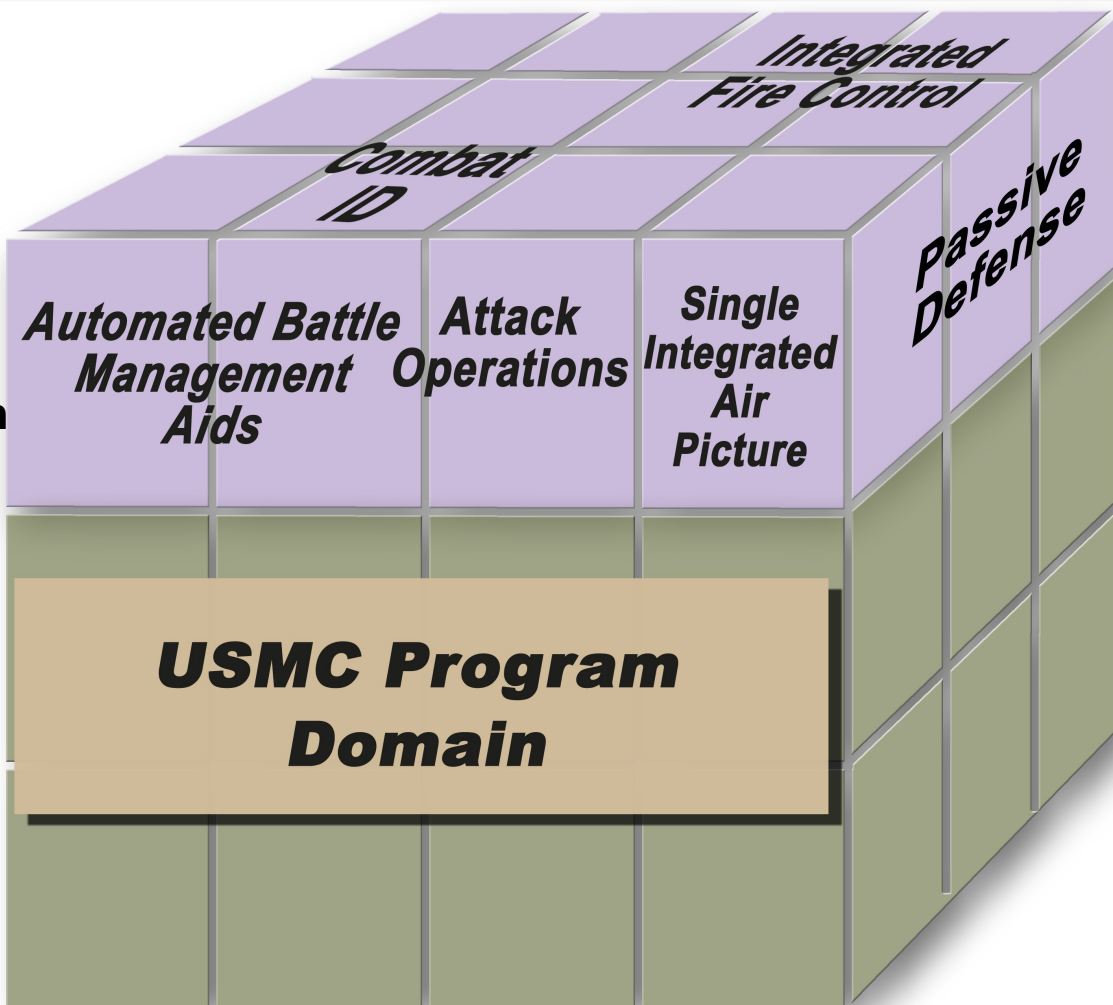
CAC2S

**Joint
Integration**

Sensors

Weapons

**Command
and Control**



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Vision Implications : Impacts on Command & Control



Old

- ◆ Platform Centric
- ◆ Massed Force
- ◆ Strategic Lift
- ◆ C2 Ashore
- ◆ Line of Sight
- ◆ Closed Architectures
- ◆ Service Centric
- ◆ Centralized Planning

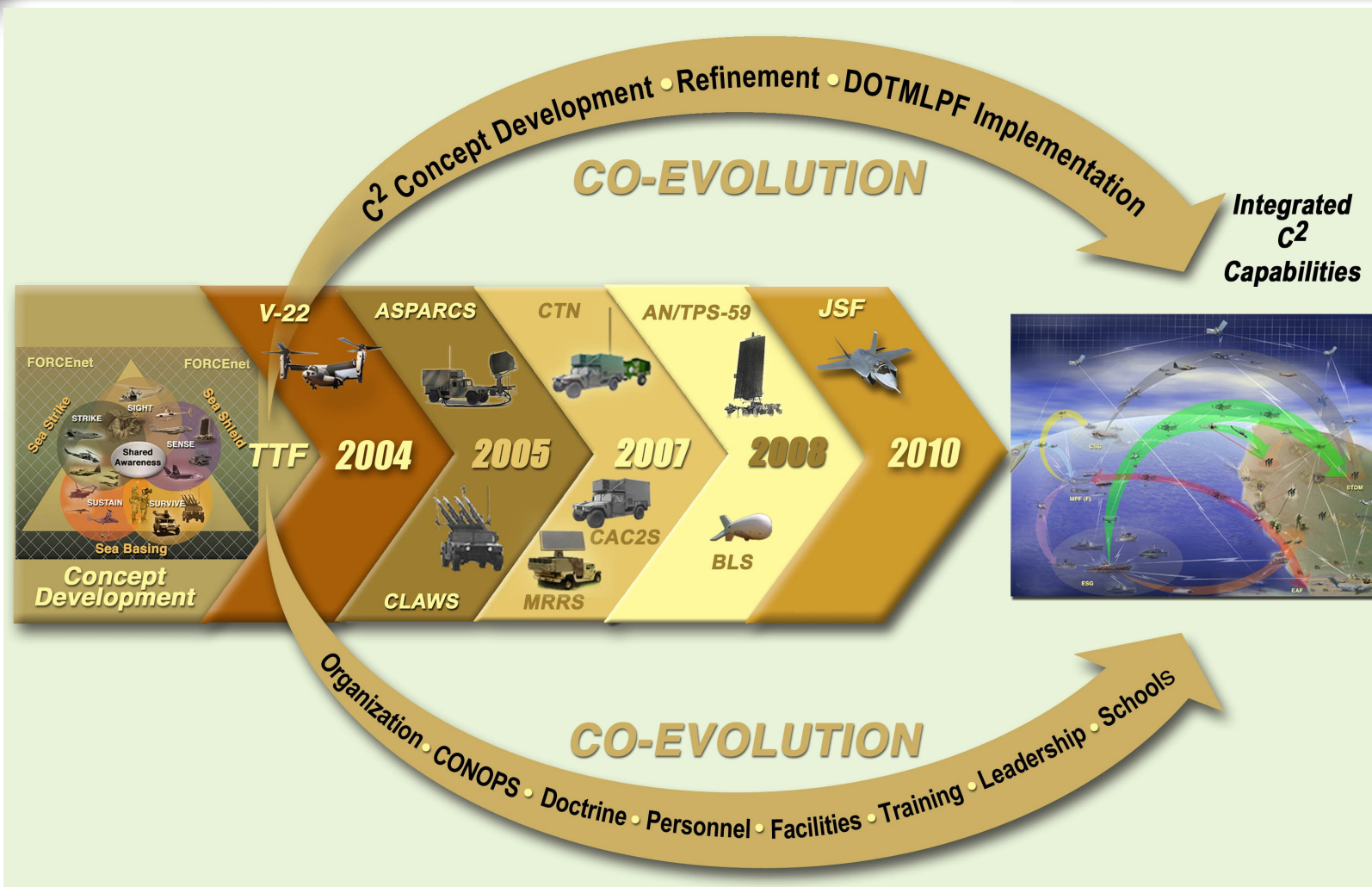
New

- ◆ Network Centric
- ◆ Distributed Force
- ◆ Organic Lift
- ◆ Seabased C2
- ◆ Over-the-Horizon
- ◆ Open Architecture
- ◆ Joint/Multinational
- ◆ Collaborative Planning





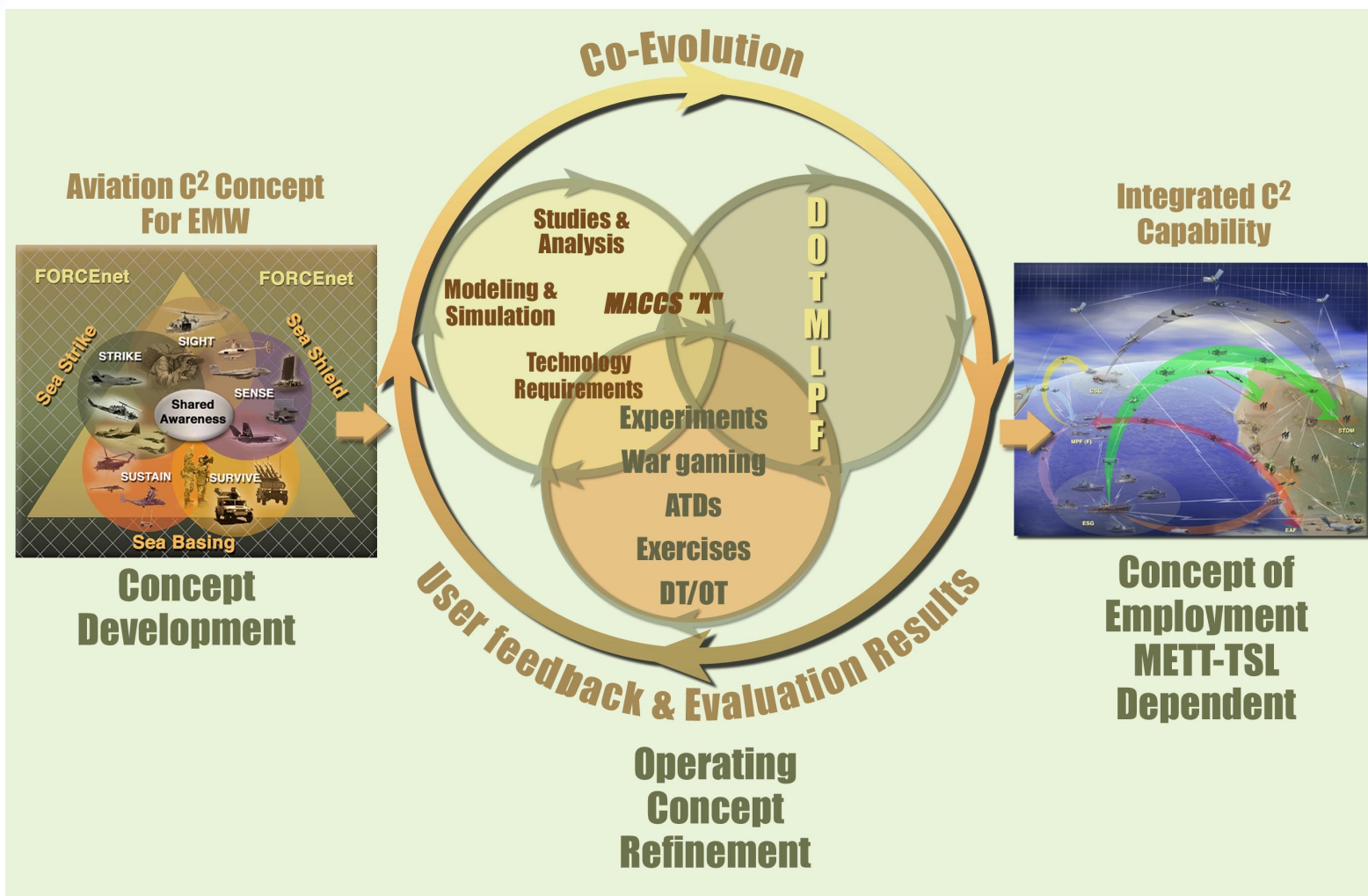
Aviation Timeline



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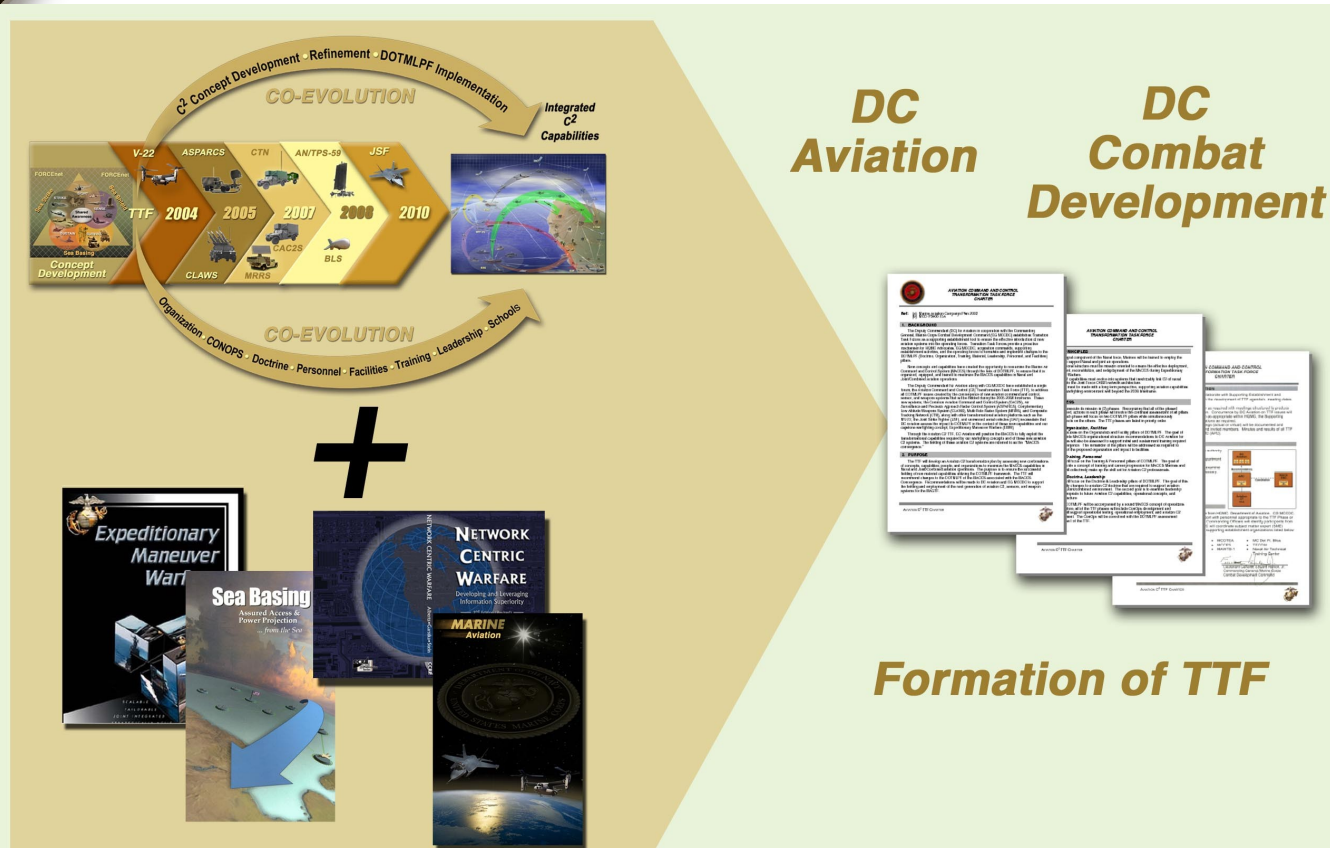


Transformation





Response to Unprecedented Change: TTF

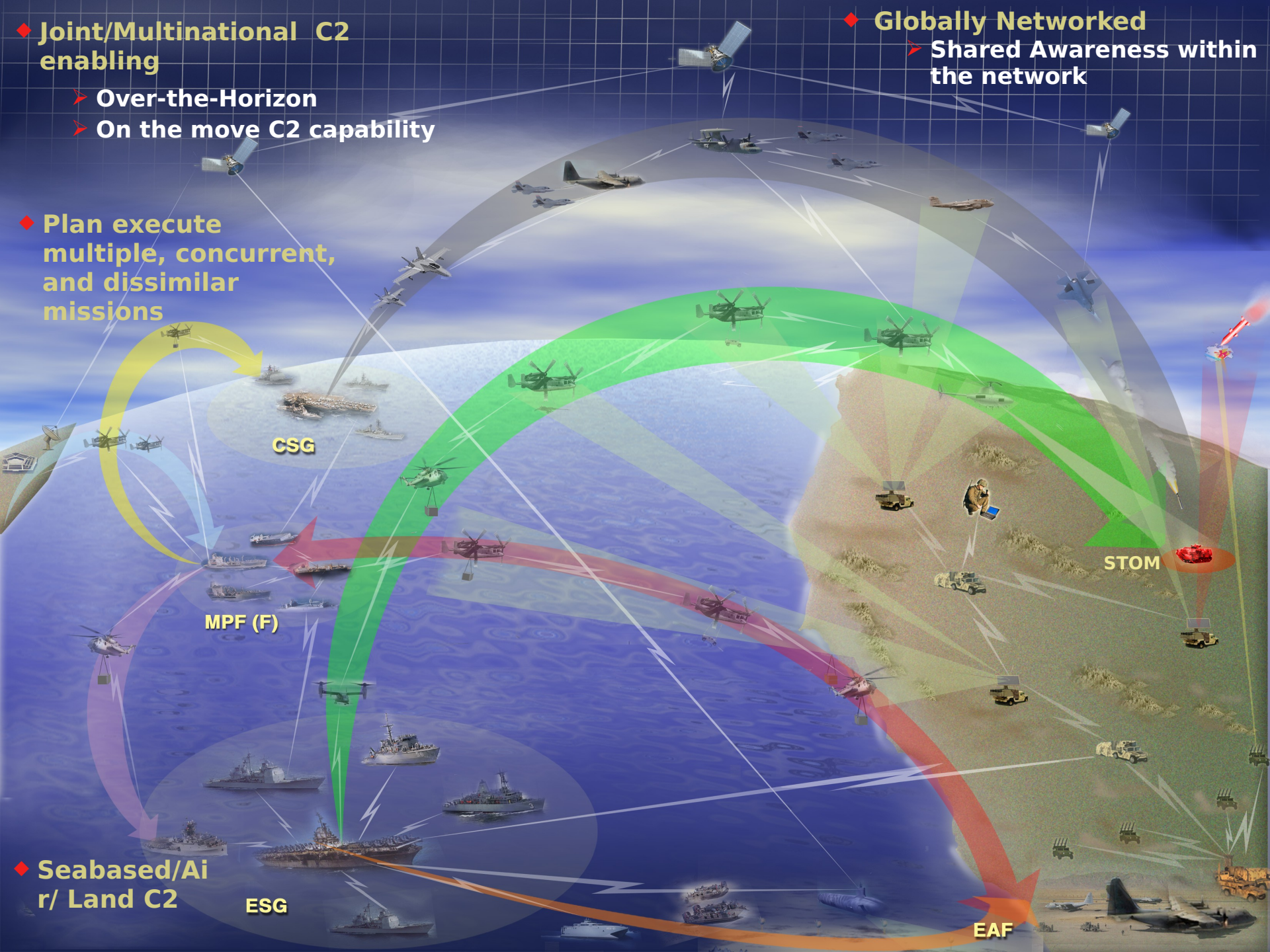


- ◆ **Purpose**
 - Proactive Optimization of DOTMLPF
- ◆ **Guiding Principles**
 - Train and Organize as you fight
 - Decisions made with a long-term perspective
- ◆ **Quarterly meetings**
 - Operating forces
 - Support establishment
 - UOMC

TTF MACG ESC/OAG #1 Priority



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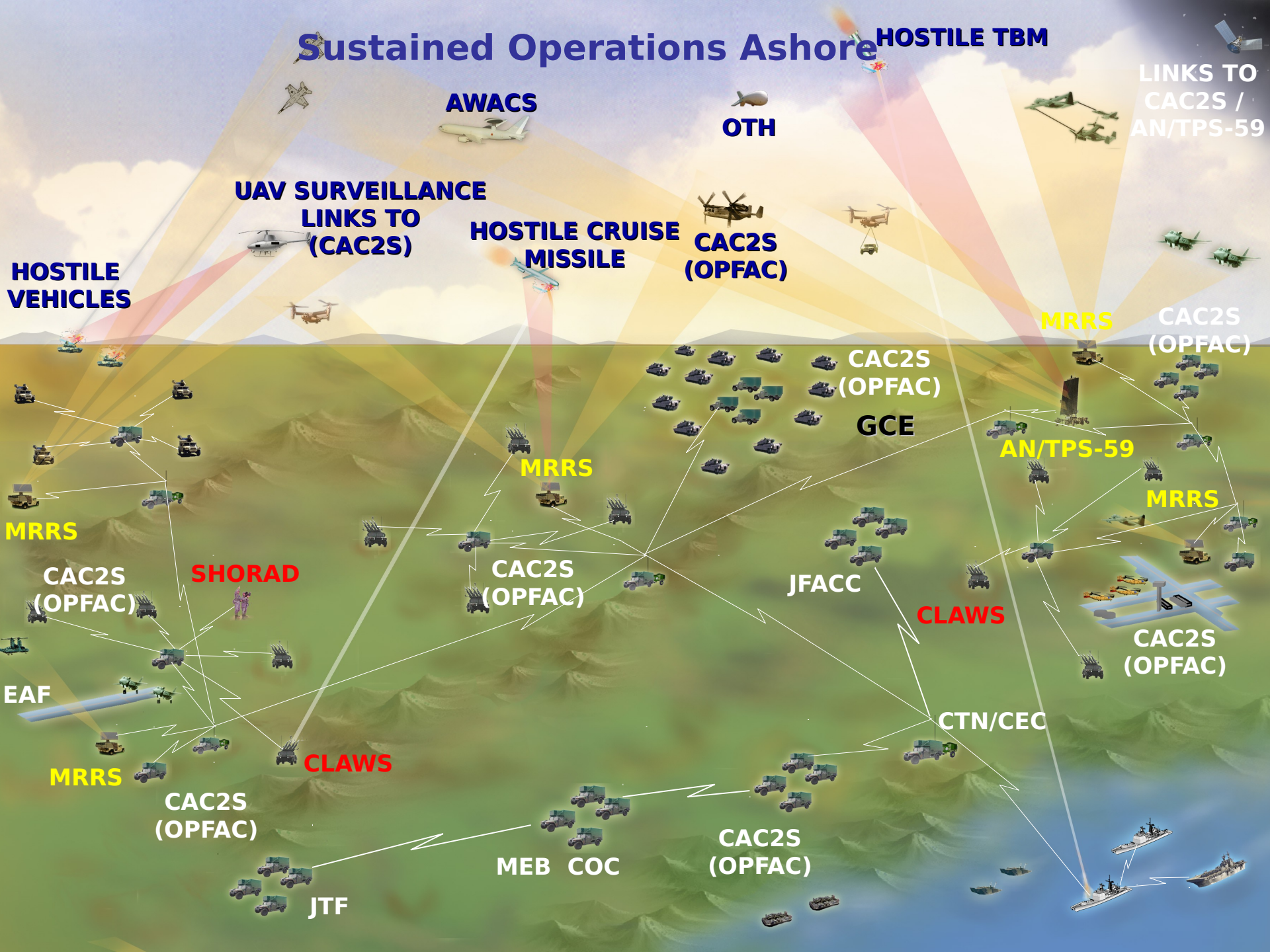


Expeditionary C2, Sensors, and Weapons

- ◆ Sling Loaded via V-22/CH53
- ◆ Provides over land sensor and weapons coverage



Sustained Operations Ashore





Sensor Road Ahead



- ◆ **In 2008 the MACCS will employ expeditionary networked sensors with joint/multi-national assets capable of multi-source fusion, sensor cueing, and provides fire control quality data to shooters. The MACCS as part of the joint family of systems, will be capable of tracking all airborne objects in our area of interest and supports the Aviation C2 Vision and the tenants of Network Centric Warfare**





Definitions

◆ **Sensor Netting**

- The process of electronically sharing sensor data among sensors to increase capability over that provided by any single sensor

◆ **Sensor Fusion**

- The process of mathematically amalgamating data derived from multiple sensors in order to create and characterize a single track. The data fused may be of several forms, including measurement reports, tracklets, tracks, features, characteristics, attributes, identification, and position reports

◆ **Composite Track**

- A track generated by time data measurements from separate sensors of sufficient fire control quality to support the employment of the CLAWS weapons system

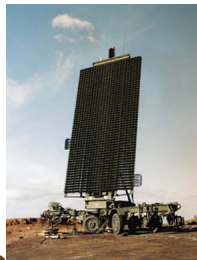




Platform vs. Network Centric



TPS 63



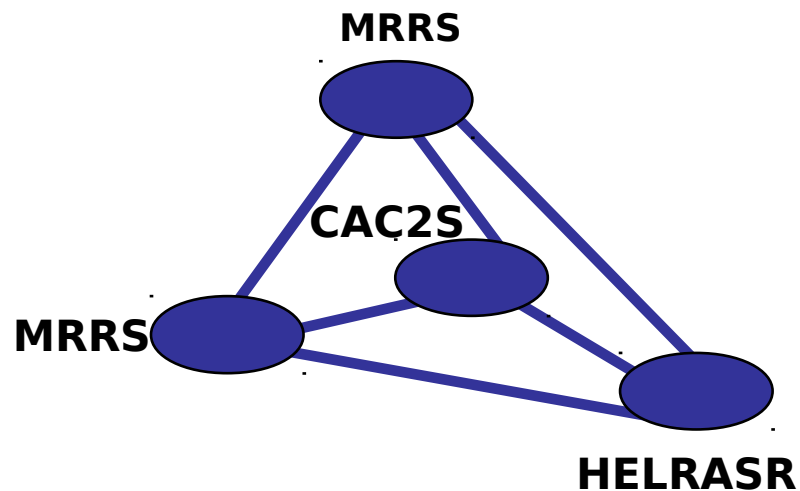
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Networking The Force



Sensors

Shooters

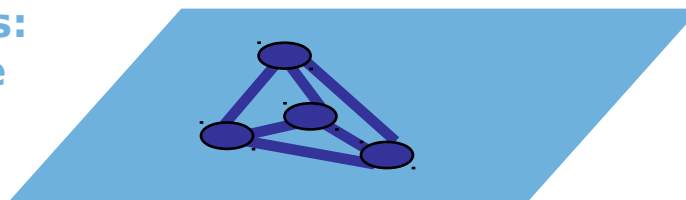
Information
Timeliness

Minutes

Seconds

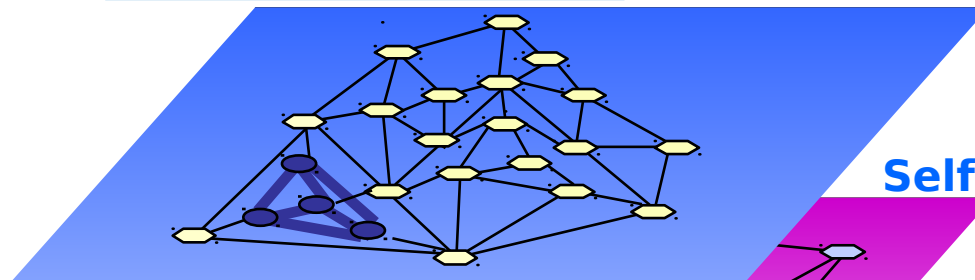
Sub-seconds

Sensor Networks:
Joint Composite
Tracking



Sensor Fusion
Weapons
Control

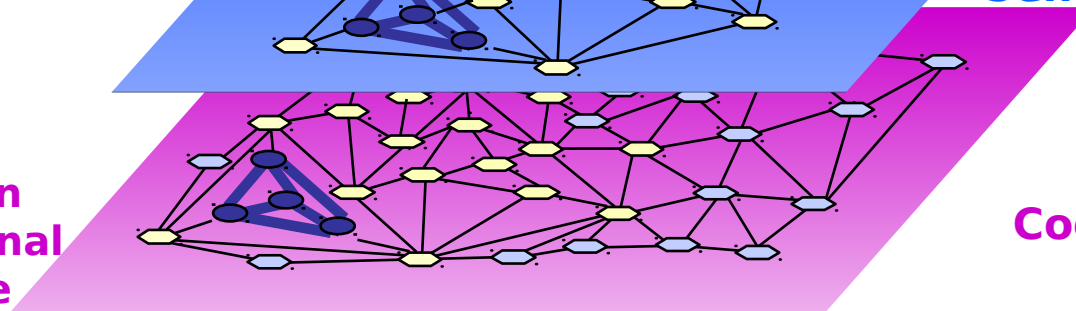
Joint Data
Network



Force
Control

Self-Synchronizing
Forces

Common
Operational
Picture



Force
Coordination

Information
Accuracy

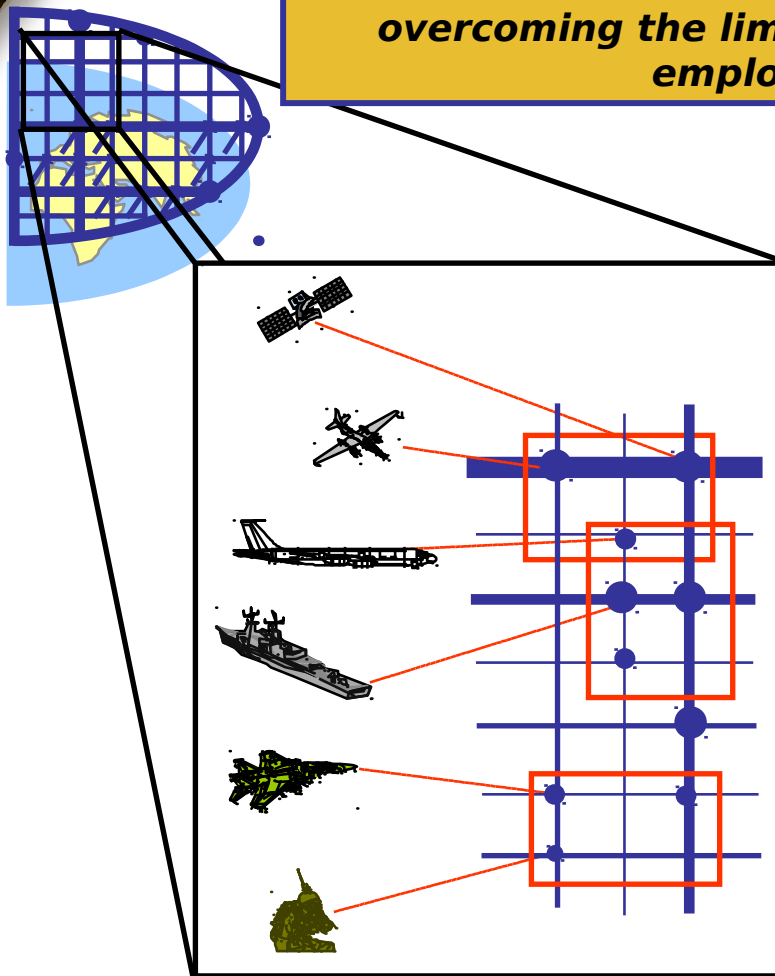


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Increased Awareness

A network-centric force increases battlespace awareness by overcoming the limitations of standalone sensors through employment of sensor networks



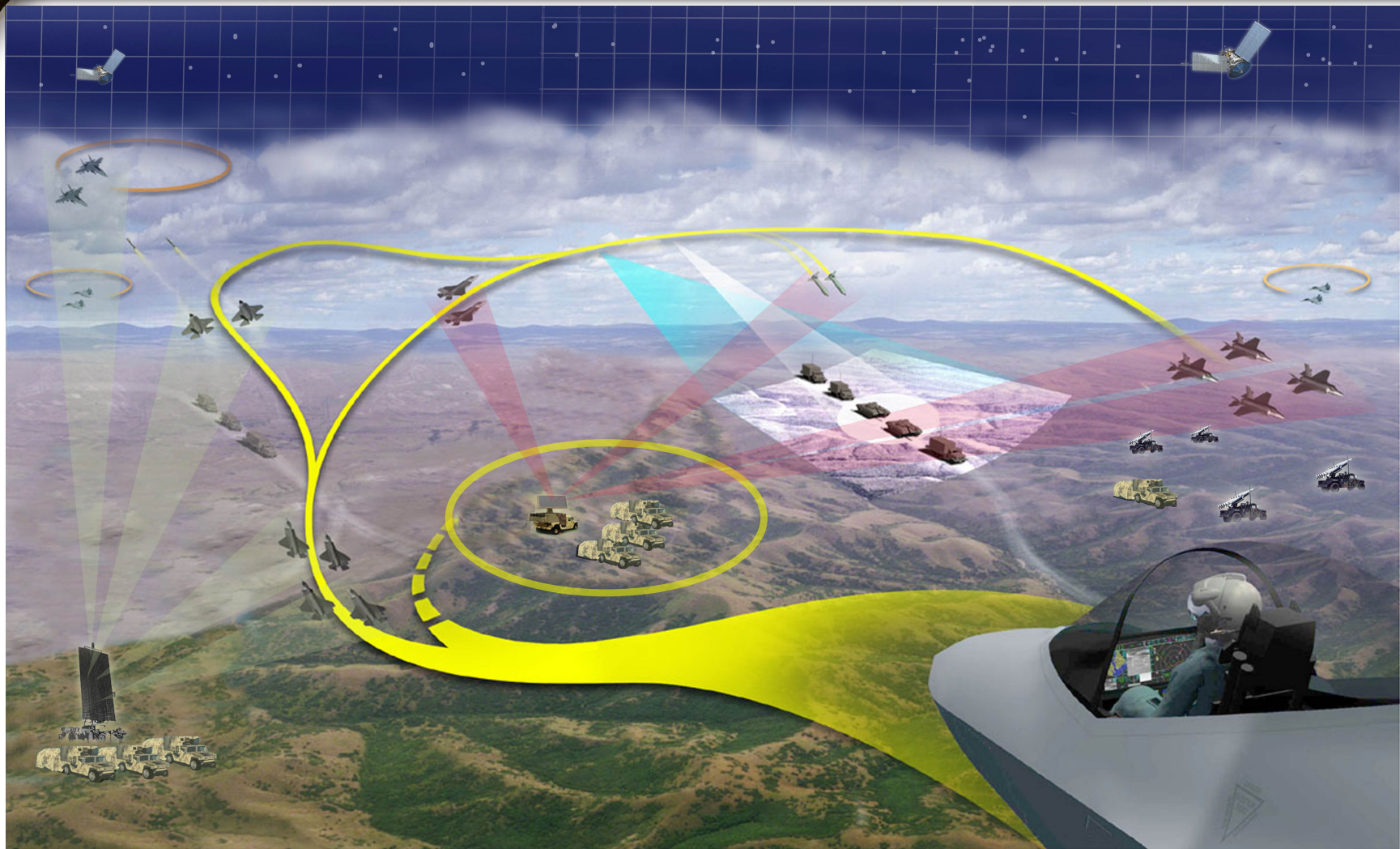
- ◆ **Sensor Networks enable Commanders to**
 - Rapidly generate Battlespace Awareness
 - Synchronized operations
 - Maximize weapons employment
- ◆ **Dynamically network (connect, share, and collaborate)**
 - Sensors (regardless of platform)
 - Decision-makers (regardless of location)
 - Shooters (regardless of service)
- ◆ **Operational Capabilities**
 - Improved Data Fusion
 - Dynamic Sensor Tasking
 - Universal Sensor Recruitment



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Single Integrated Air Picture for Network Centric C2 Operations



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QUESTIONS/DISCUSSION



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